



Three levels of built-in security.  
The HP Compaq nc2400 Business Notebook with Intel® Centrino® Mobile Technology.  
[Learn More »](#)



THE COMPUTER IS PERSONAL AGAIN.

» All 33 InfoWorld Newsletters  
Technology & Business Daily  
Enter Email Address  [SIGN UP](#)

# InfoWorld

HOME NEWS ► COLUMNS ► BLOGS ► PODCASTS ► VIDEO RESOURCES ► TECHNOLOGIES ► TEST CENTER ► EVENTS ► CAREERS IT EXEC-CONNECT

## Run datacenters on direct current, see immediate savings

Inefficiency is partly to blame for excessive heat in today's datacenters

By Dan Goodin  
October 06, 2006

 E-mail  Printer Friendly  Reprints  Slashdot It!

Of all the waste in the typical datacenter, none is as often overlooked as the series of steps that convert power back and forth from AC (alternating current) to DC (direct current). My Ton, senior project manager at Ecos Consulting, aims to change that. Ton says companies can cut power usage by more than 20 percent by retooling their datacenters to run on DC.

### Free IT resource

Learn how to increase network productivity and agility without compromising security.

Sponsored by HP ProCurve

### Free IT resource

Enterprise Search Spotlight

Sponsored by Google

### MORE ON 'GREENER DATACENTERS'

- » [IT confronts the datacenter power crisis](#)
- » [Back to special report](#)

### DOWNLOAD PDF

[InfoWorld's special report IT confronts the datacenter power crisis](#)

Under the typical topology, power arrives at the server room as AC, where it is converted to DC so it can be stored in uninterruptible power supplies. The power is then converted back to AC so it can be transported to other parts of the facility and then back again to DC by the power supply inside each server, router, load balancer, or other networking equipment.

Each conversion step results in power dissipation in the form of heat. "What you have is several layers of conversion, and every time you convert you lose," Ton says.

Earlier this year, Ecos Consulting joined approximately 50 companies, including Intel and Sun Microsystems, to figure out what it would take for datacenters to convert power to DC only once. Although this may sound exotic, telecommunications companies have been employing DC power in their switching centers for decades. Ton and the other participants adjusted the telcos' model, converting the AC power to the 380-volt DC preferred by most servers. They then fed the DC current to specially modified servers that could accept it directly, eliminating the intermediate conversion steps. Remarkably few specially designed components were needed to build the alternate topology; they used commercially available rectifier units, a common brand of busway power distribution hardware, and standard three-prong power cords.

The findings: Building datacenters that run on DC was relatively easy, eliminated a lot of costly equipment, and could boost power efficiency by about 20 percent. All that stands in the way of widespread usage, says Ton, are vendor standards for plugs, cords, rectifier units, and other DC gear.

Data393 runs a modern datacenter that uses DC for most of its hosting operations. "By the time the DC gets to my server room, I've reduced the heat load by 30 percent," says Steve Merkel, the company's senior systems engineer. Merkel estimates the DC power system shaves as much as 20 percent off the electric bill for the hosting side of his business. But so far Merkel's enthusiasm has not rubbed off on Data393's colocation customers, which by and large still opt for AC. "People are looking at that initial up-front cost and shying away," he says.

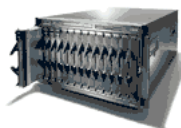
 E-mail  Printer Friendly  Reprints  Slashdot It!

### TOP NEWS:

- » [Nortel claims a fatter WiMax pipe](#)  
The company is demonstrating WiMax products that use multiple antennas, for a tripling of speed and doubling of capacity
- » [Microsoft patches Windows, Office, .Net](#)  
Six of the 11 updates are rated critical
- » [Symantec taps VeriSign, Accenture for security boost](#)  
Company announces partnership with VeriSign to support authentication program; Accenture for 1000-staff strong security infrastructure
- » [French gov't aims for 4 million on fiber by 2012](#)  
Minister says he will have little difficulty persuading French telecom operators to help him reach goal
- » [EU telecoms try to ward off breakup moves](#)  
The prospect of being broken up has sparked an angry response from the former telecom monopolies
- » [YouTube buy lends more weight to media deals](#)  
Without Google, YouTube would have likely faced an impossible task in negotiating similar deals with all of the major content producers



**TAKE BACK CONTROL WITH AN IBM BLADECENTER WITH A DUAL-CORE INTEL® XEON® PROCESSOR.**



### InfoWorld WEBCASTS

#### AVOIDING THE ENTERPRISE MOBILITY SOLUTION POTHOLES: DEVICE MANAGEMENT PAVES THE WAY

Mobile devices can be incredibly productive for an enterprise - provided you have an effective management plan. Our new Webcast will show you how mobile device management can solve



InfoWorld's newly updated IT Strategy Guide offers tips on how to plan, deploy and manage a scalable VoIP solution that will meet your company's specific needs.

» [Click here to download now](#)

» [Back to special report](#)

### RELATED STORIES


- [Cisco acquires Nuova through investment](#)
- [HP weighs in further on data center heat issues](#)

Popular Tags:  
powermanagement, dcpower, datacenters  
» [COMPLETE LIST OF TAGS](#)

### FIND PRODUCTS AND COMPANIES

[SEARCH](#)  
» [COMPLETE PRODUCT GUIDE](#)

[Search Jobs](#) [MORE OPTIONS](#) [careerbuilder.com](#)

IT Jobs  Enter City  [SEARCH](#)  
US 

### TECHNOLOGY INDEX

- Applications
- Application Development
- Security
- Networking
- Wireless
- Platforms
- Hardware
- Data Management
- Storage
- Web Services
- Business
- Telecom
- Professional Services
- Standards

### TECH WATCH RSS

#### Opera CTO talks future Web standards

Håkon Wium Lie, CTO of Opera Software, visited the InfoWorld offices last week to discuss the Web, the future of HTML, and the latest features of his company's Opera browser. Lie, the father of the CSS (Cascading Style Sheet) specifications ...

#### Sun debunks Java-Vista clash

Contrary to rumors, Java will work fine with the Windows Vista OS, according to Sun Microsystems. At least newer versions of Java will, anyway. Looking to debunk what a Sun representative described as "misinformation," the company is steering ...

### JON UDELL'S CORNER RSS



#### Evolving Amazon's services into products

(InfoWorld) - The announcements from Amazon Web Services LLC just keep on coming. The latest news flash is...

[Jon's Blog](#) | [Jon's Column](#)

### COLUMNISTS

#### Emerging security solutions vie for approval

(InfoWorld) - Aside from a flurry of beta releases, security updates, and the usual E.U. he said/she said...



» [MORE COLUMNISTS](#)

### MORE INFOWORLD BLOGS

#### SMB IT RSS

#### Samsung Does Portable Solid State

I'm usually looking at Samsung's office-related infrastructure like its new multi-function printer the SCX-5530FN ...

security worries, provide an ROI of up to \$500 per device, per year, and much more. Join for this exclusive webcast now.

» [Click here to view this Webcast](#)



Earning high performance and reliability ratings, all for 1/3 of the cost of our competitors. Switch to VoIP now. [Learn more](#)

Business made simple

- Special Advertising Partners -

WHITE PAPERS

- » [Email Security Reaches New Levels to Combat Evolving, Malicious Inbound Threats](#) - "2006 has seen startling growth in spam email and phishing attacks. Additionally, with organized crime now involved in spam and virus outbreaks organizations require more than a simple anti-spam ...
- » [Seven Steps to Software Security from Fortify](#) - Application security is emerging as one of the corporate worlds greatest concerns with 75% of all hacks made possible by software vulnerabilities. But where do you start? Learn seven practical steps ...
- » [Protecting Web Applications from Attack and Misuse](#) - Threats facing enterprise organizations have shifted from network-layer exploits to more formidable attacks. Find out more about these threats and how to defend against them by downloading "9 Critical ...
- » [Secure at the Source: Implementing Source Code Vulnerability Testing in the Software Development Life Cycle](#)
- » [Agentless or Agent-based Monitoring? Choose a Hybrid Approach Using BMC Performance Manager.](#)
- » [Solving the spyware problem](#) - Sophos

MORE PLATFORMS WHITE PAPERS

- » [Best Practices for Mobility: Free Forrester Report](#)  
A secure and reliable mobility strategy has never been more critical. Learn how to develop a ...
- » [HP Virtualization: Optimize Your Management](#)  
The benefits of virtualization are undeniable: lower costs, greater IT efficiency, and improved ...
- » [Identify, Solve Supply Chain Issues](#)  
Yankee Group analysts show you how market-leading companies are aligning shared processes to ...
- » [Maximize SAP with HP Virtualized Solutions](#)  
This webcast explores solutions for the IT challenges faced by many enterprise-level firms today. ...
- » [Identify, Solve Supply Chain Issues](#)  
Yankee Group analysts show you how market-leading companies are aligning shared processes to ...

>> WHITE PAPERS LIBRARY

WHITE PAPERS E-MAIL ALERT

Find out when the latest white paper is available:

E-mail Address

Go

WHITE PAPERS BY TOPIC

- [Application development](#)
- [Applications](#)
- [Business](#)
- [Hardware](#)
- [Networking](#)
- [Platforms](#)
- [Security](#)
- [Standards](#)
- [Storage](#)
- [Telecom](#)
- [Web services](#)
- [Wireless](#)

SPONSORED LINKS

- » [Sun Event](#) - Our latest innovations for your IT challenges. View Now
- » [HP](#) - Empower your business with the new HP BladeSystem c-Class.
- » [Microsoft](#) - Microsoft Free Security Tools & Updates
- » [Microsoft](#) - Visual Studio 2005. Over 400 new features, the difference is obvious.
- » [AT&T](#) - Navigating the roadmap to a converged network.

INFOWORLD MARKETPLACE

- » [SAP & TomorrowNow Support](#)  
SAP & TomorrowNow offer competitor users full support cost savings through 2015 up to 50%. You get ...
- » [Business Intelligence and Integration Platform](#)  
What good is business intelligence if it doesn't scale to everyone in your organization? Find out ...
- » [Total End-to-End Relocation Services from IBM](#)  
Make IBM your single source to plan and execute all facets of your relocation. Click to learn more.

>> [BUY A LINK NOW](#)

FREE SUBSCRIPTION



Order today to get your **FREE subscription** (a \$195 value!) to InfoWorld magazine, the weekly publication that provides indispensable product information to IT professionals.

NOTE: Complimentary subscriptions sent only to those applicants who qualify.

First Name:

Last Name:

Company Name:

Title:

Mailing Address:

City:

State/Province:

Select One

Zip/Postal Code:

Email Address:

CONTINUE

NOTE: Offer valid in U.S. and Canada only  
Non-U.S. click [here](#)

Open Sources **RSS**

[Red Hat's new channel guy](#)

Red Hat is hell-bent on bulding up its already strong (but not necessarily ecstatic) channel, and just hired a great ...

- [Advice Line](#)
- [Database Underground](#)
- [The Deep End](#)
- [Enterprise Mac](#)
- [Geeks in Paradise](#)
- [Grid Meter](#)
- [The Gripe Line](#)
- [InfoWorld Daily](#)
- [Inside IT](#)
- [IT Troubleshooter](#)
- [ITXtreme](#)
- [Jon's Radio](#)
- [Open Sources](#)
- [ProdBlog](#)
- [Real World SOA](#)
- [Security Adviser](#)
- [SMB IT](#)
- [The Storage Network](#)
- [Tech Watch](#)
- [Virtualization Report](#)
- [Zero Day](#)

ADVERTISEMENT

Switch to VoIP now and save up to 66% on the overall cost of your network. Now that's technology you can bank on. [Learn more](#)



RESOURCE CENTER

advertisement

**Reliable Remote Access**  
Access your email, files, and network from any Internet-connected computer.  
[www.gotomypc.com](http://www.gotomypc.com)

Ads by [techwords](#) beta

[See your link here](#)

**GOVERNMENT IT & POLICY**

- [CONTRACTS AWARDED](#)
- [Democrats Aim to Regain Edge In Getting Voters to the Polls](#)
- [Instant Messages, Lingering Paper Trail](#)

